

a polarization film; and
a prismatic element have projection rows facing the surface light source device,
the prismatic element being formed on one face of the polarization film such that together, the
polarization film and the prismatic element form the composite optical element, and
a liquid crystal display panel formed adjacent to the composite optical element with the
polarization film facing the liquid crystal display panel.

8. (NEW) A liquid crystal display device according to claim 7,
wherein the surface light source device and the projection rows of the prismatic element
are separated by a distance of 0.5 to 5 mm.

9. (NEW) A liquid crystal display device, comprising:
a surface light source device;
a composite optical element comprising:
a polarization film;
a polarization separating sheet which transmits light components having a first
polarization plane and reflects light components having a second polarization plane
perpendicular to the first polarization plane; and
a prismatic element have projection rows facing the surface light source device,
the polarization separating sheet being interposed between the polarization film and the
prismatic element such that together, the polarization film, the polarization separating sheet and
the prismatic element form the composite optical element with the prismatic element serving as
one face of the composite optical element, and
a liquid crystal display panel formed adjacent to the composite optical element with the
polarization film of the composite optical element facing the liquid crystal display panel.

10. (NEW) A liquid crystal display device according to claim 9,
wherein the surface light source device and the projection rows of the prismatic element
are separated by a distance of 0.5 to 5 mm.

REMARKS

In accordance with the foregoing, the specification and claim 6 have been amended and

new claims 7-10 have been added. Claims 1-10 are pending and under consideration.

The Examiner objects to the drawings, asserting that the reference characters 11 and 1 have both been used to designate a surface light source device. This is correct. The reference numeral 1 has been used in prior art Figs. 4 and 5. The reference numeral 1 has been used in Fig. 1. The specification correctly refers to Figs. 1, 4 and 5, using the appropriate reference numerals. To differentiate the prior art device from the inventive device, different reference numerals have been used. It is not believed that any confusion is caused by this differentiation. Accordingly, no change has been made.

The Examiner objects to the Japanese characters in Fig. 3. Being filed herewith is a Letter to the Examiner Requesting Approval of Changes to the Drawing. In the Letter to the Examiner, the Japanese characters are registered to be eliminated.

The Letter to the Examiner also requests that Fig. 6 be added. Fig. 6 shows the structure claim claimed in claim 6 and described in the specification at page 13, lines 13-18. The polarization film 16 and the prism sheet 21 shown in Fig. 6 are also shown in Fig. 1. Fig. 6 adds is a schematic showing of the polarization separating sheet member SP. This member SP, because it is shown schematically and described in the specification, introduces no new matter. Entry of Fig. 6 is requested.

Claim 6 is rejected under 35 U.S.C. § 112, second paragraph for indefiniteness. The Examiner questions whether the polarization separating sheet member is the same as the polarization film. From the functions described, it should be clear that the elements are not the same. The polarization separating sheet member transmits input light components having a first polarization plane and reflects input light components having a second polarization plane perpendicular to the first polarization plane. On the other hand, the polarization film may transmit input light components having a first polarization plane and absorb input light components having a second polarization plane, perpendicular to the first polarization plane.

Claims 1, 2 and 4-6 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,587,816 to Gunjima et al. Referring to Fig. 1 of the reference, Gunjima et al. employs a polarized light separator 6, a prism array 7 and a polarizing sheet 9. As described at column 12, lines 54-57, element 8 is a light diffusing sheet. The polarized light separator 6 in Gunjima et al. corresponds with the polarization separating sheet member SP shown in Fig. 6. The polarizing sheet 9 of Gunjima et al. corresponds with the polarization film 16 described in the specification, and the prism array 7 of Gunjima et al. corresponds with the prism sheet 21

(optical element providing a light control face) described in the specification.

The Examiner asserts that Gunjima et al. discloses a composite optical element having a polarization separating sheet member 6, wherein one face of the polarization separating sheet member provides a light control face 7 which is directed to the surface light source device. This seems to be incorrect. Although Gunjima et al. gives a description about the prism array 7 (element providing a light control face) at column 12, lines 11-57, there is no disclosure that the prism array 7 forms a composite optical element with any other optical element, such as the polarized light separator 6 or the polarizing sheet 9. ①

Gunjima et al. states at column 12, lines 31-45, that light is emitted from the polarized light separator 6 and then incident to the apex face of the prism array 7. This indicates that the two elements form no sort of composite structure. Although Gunjima et al. describes how the polarized light separator 6 is formed of a multi-layer structure, this does not mean that the polarized light separator 6 forms a composite optical element with the prism array 7. It is well-known that polarized light separators have a multi-layer structure to perform the polarization separating function.

With regard to claims 1 and 2, Gunjima et al. does not disclose or suggest a composite structure with an LCD panel provided with a light control face. Referring to Fig. 1 of Gunjima et al., the polarizing film 9 is completely separate from the prism array 7 providing a light control face. The separated arrangement would not teach the composite structure claimed in claims 1 and 2. Accordingly, it is submitted that the prior art rejections should be withdrawn.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: August 15, 2001

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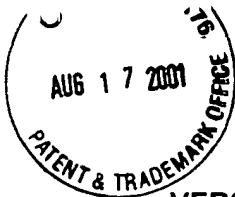
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on August 15, 2001
STAAS & HALSEY

By: Mananand Fygar
Date: 8-15-01



VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please AMEND the paragraph beginning at page 6, line 8, as follows:

Fig. 1 is a cross section to illustrate a LCD of an embodiment in accordance with the present invention;

Fig. 2 is a cross section to illustrate glaring which appears on an emission face of a conventional guide plate;

Fig. 3 is a cross section to illustrate reduced glaring which appears on an emission face according to an illustrating manner similar to that of Fig. 2;

Fig. 4 is an exploded perspective view of a conventional surface light source device of side light type; [and,]

Fig. 5 is a cross section along line A-A shown in Fig. 4; and

Fig. 6 is a modified composite element having a prism sheet, a polarization separating sheet and a polarization film.

Please AMEND the paragraph beginning at page 7, line 23 as follows:

On the glass substrates 17, 19, transparent electrodes are formed, respectively, while the liquid crystal 18 is interposed and shut in therebetween. The LCD panel [1 2] 12 provides LCD cells having a matrix-like arrangement. Each LCD cell permits a light component having a particular polarization plane to be transmitted through the cell, the particular polarization plane being rotated depending on voltage applied to the transparent electrodes of the cell.

Please AMEND the paragraph beginning at page 10, line 11, as follows:

Since this embodiment employs the LCD panel 12 equipped with the polarization film 16, the prism sheet 21 is avoided from being contact with the emission face [13]C] 13C of the guide plate 13. Accordingly, the emission face 13C is avoided from damaging the projections of the prism sheet 21. This leads naturally to avoidance of abnormal image which would appear when damaged projections are irradiated [ny] by illumination light L brightly.

Please AMEND the paragraph beginning at page 10, line 17, as follows:

In other words, the polarization [file] film 16 and the prism sheets 21 are unified to provide a unified composite optical element which is harder to be deformed as compared with cases where they are not unified.

Please AMEND the paragraph beginning at page 10, line 20, as follows:

Besides, even if any member such as the guide plate 13 affected by deformation such as curving or expansion/contraction owing to factors such as variation of temperature, the prism sheet 13 is hard to contact with the emission face 13C of the guide plate 13, because the composite optical element is mounted in the LCD panel 12 which is held spaced from the surface light source device 11. Accordingly, the prism sheet 21 is prevented from sticking to the emission face.

Please AMEND the paragraph beginning at page 13, line 19, as follows:

new matter?

In this case, the polarization separation sheet member may be coupled with the prism sheet 21 to provide a composite optical element. Three elements (prism sheet [21] 21, polarization separation sheet member SP and polarization film 16) may be coupled with one another to provide a composite optical element, as shown in Fig. 6.

IN THE CLAIMS:

Please AMEND the following claims:

6. (ONCE AMENDED) A composite optical element comprising a laminated structure, comprising [the structure including]:

a polarization separating sheet member which transmits input light [component] components having a first polarization plane and reflects input light [component] components having [another] a second polarization plane perpendicular to the [former] first polarization plane; and

a polarization film, wherein one face of the composite optical element provides a light control face for modifying directivity of input light.

Please ADD the following claims:

7. (NEW) A liquid crystal display device, comprising:

a surface light source device;

a composite optical element comprising:

a polarization film; and

a prismatic element have projection rows facing the surface light source device, the prismatic element being formed on one face of the polarization film such that together, the polarization film and the prismatic element form the composite optical element, and

a liquid crystal display panel formed adjacent to the composite optical element with the polarization film facing the liquid crystal display panel.

8. (NEW) A liquid crystal display device according to claim 7,

wherein the surface light source device and the projection rows of the prismatic element are separated by a distance of 0.5 to 5 mm.

9. (NEW) A liquid crystal display device, comprising:

a surface light source device;

a composite optical element comprising:

a polarization film;

a polarization separating sheet which transmits light components having a first polarization plane and reflects light components having a second polarization plane perpendicular to the first polarization plane; and

a prismatic element have projection rows facing the surface light source device, the polarization separating sheet being interposed between the polarization film and the prismatic element such that together, the polarization film, the polarization separating sheet and the prismatic element form the composite optical element with the prismatic element serving as one face of the composite optical element, and

a liquid crystal display panel formed adjacent to the composite optical element with the polarization film of the composite optical element facing the liquid crystal display panel.

10. (NEW) A liquid crystal display device according to claim 9,
wherein the surface light source device and the projection rows of the prismatic element
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